

# NIDIS Weekly Climate, Water and Drought Assessment Summary

Upper Colorado River Basin

November 9, 2010

# Precipitation and Snowpack

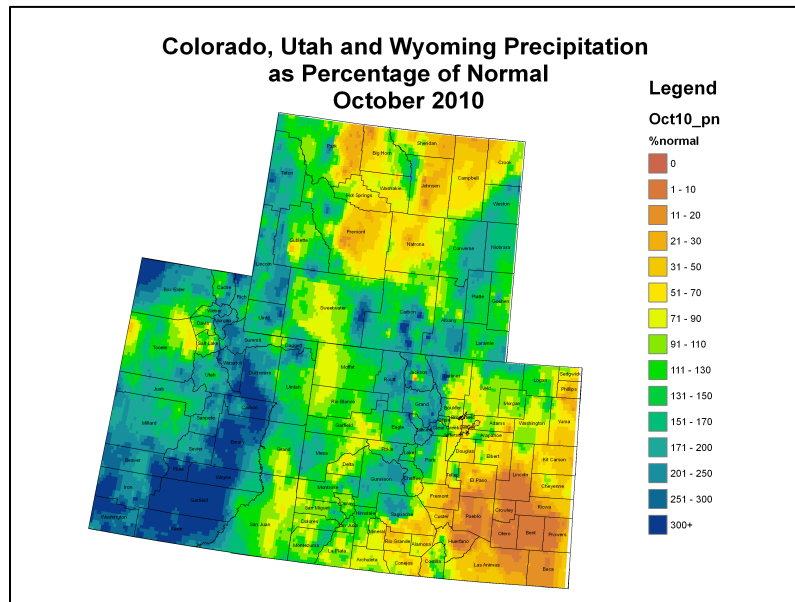


Fig. 1: October precipitation as a percent of average.

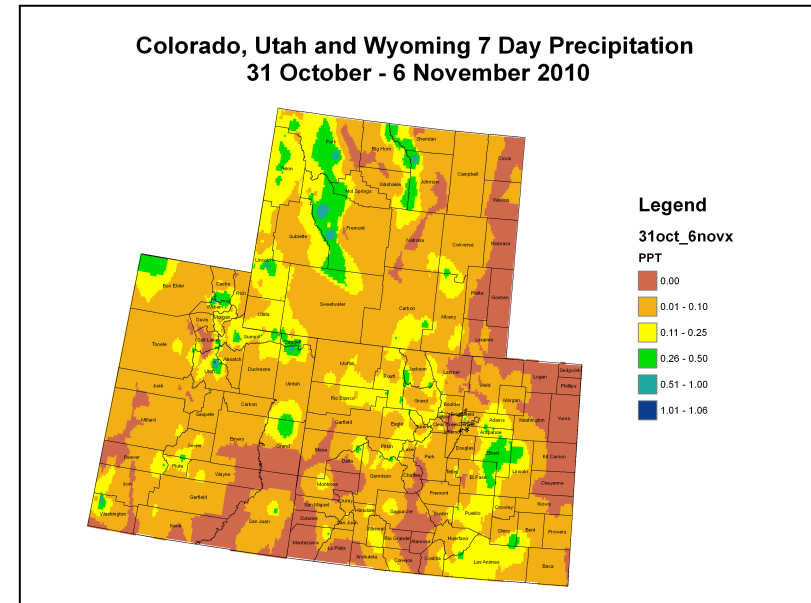


Fig. 2: October 31 – November 6 precip in inches.

Most of the Upper Colorado River Basin (UCRB) received near or above average precipitation for the month of October (Fig. 1). The driest regions were areas of Moffat County, CO, Sweetwater County, WY and San Juan County, UT. The heaviest amounts of precipitation for the month were in the northern mountains of Colorado and the Lower Green and Dirty Devil basins in Utah. Outside of the UCRB, northern Wyoming and southeastern Colorado were very dry for the month, receiving less than a quarter of an inch of precipitation.

Last week, very little precipitation fell throughout the UCRB (Fig. 2). Scattered amounts of around a quarter of an inch fell in the Upper Green River basin and in certain regions of the eastern plains of Colorado. Very little to no precipitation fell in the four corners region and in far eastern Wyoming and Colorado.

Snotel One Week Change in WY Precipitation Percent of Average  
9 November 2010

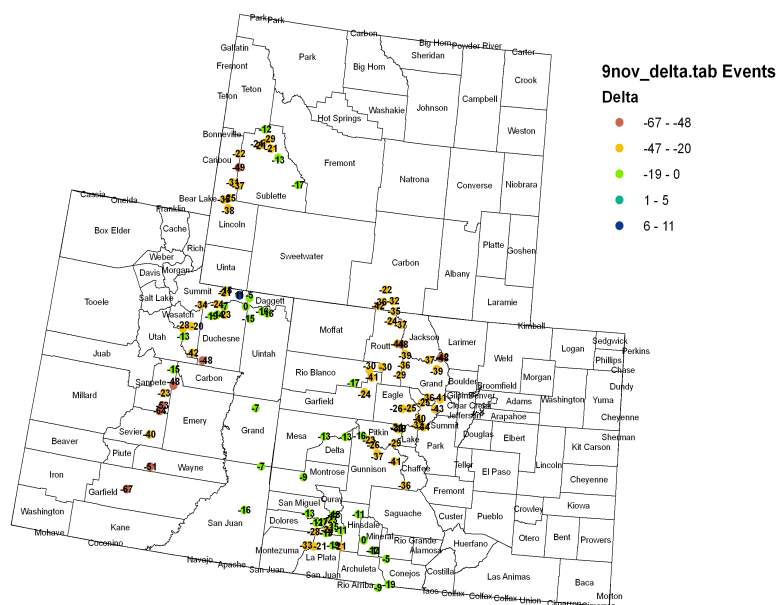


Fig. 3: SNOTEL WYTD precipitation percent of average change from last week.

Due to the lack of precipitation in the UCRB last week, most SNOTEL sites showed decreases in water-year-to-date (WYTD) precipitation percents of average from last week (Fig. 3). The large magnitudes of these weekly percentage drops are primarily because we are still very early in the water year when small changes in precipitation can have large impacts on percent of average. But these decreases do show a lack of the precipitation that would normally occur during this time of year.

Percentile rankings for the SNOTEL stations around the UCRB show most stations ranked very high (Fig. 4). Aside from a few stations in the Rio Grande basin and along the eastern border of the Upper Green River basin, most stations are showing percentiles in the 70s to 90s—meaning less than thirty percent of the water years on record have been wetter by this time. So, even though conditions were dry last week, the UCRB appears to be starting the new water year in fairly good condition.

Snotel WY Precipitation Percentile Ranking  
9 November 2010

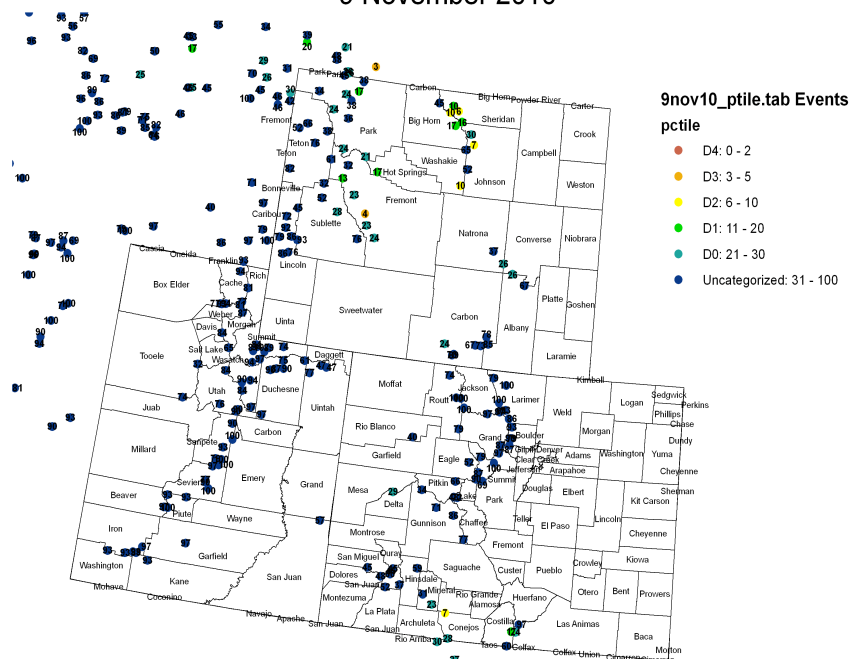


Fig. 4: SNOTEL WYTD precipitation percentiles (50% is median, 21-30% is Drought Monitor's D0 category).

# Streamflow

As of November 7<sup>th</sup>, around 84% of the USGS streamgages in the UCRB recorded normal (25<sup>th</sup> – 75<sup>th</sup> percentile) or above normal 7-day average streamflows (Fig. 5). These last two weeks have been an improvement from the dryness that prevailed over most of September and October and a return to normal and above normal flows that haven't been seen since the monsoon season in late July/early August when the surge of moisture into the region resulted in a large influx of water into the areas' rivers. Only a few stations scattered across the basin are recording below normal flows.

Looking at hydrographs from several sites around the UCRB, the recent improvements are evident on the Colorado River near the CO-UT state line and the Green River at Green River, UT, which are at 95% and 98% of normal respectively (Fig. 6). The San Juan River near Bluff, UT is still struggling with 7-day average discharge currently at the 27<sup>th</sup> percentile. Though most gages are showing near normal flows, cumulative runoff for the calendar year is still below average for many areas.

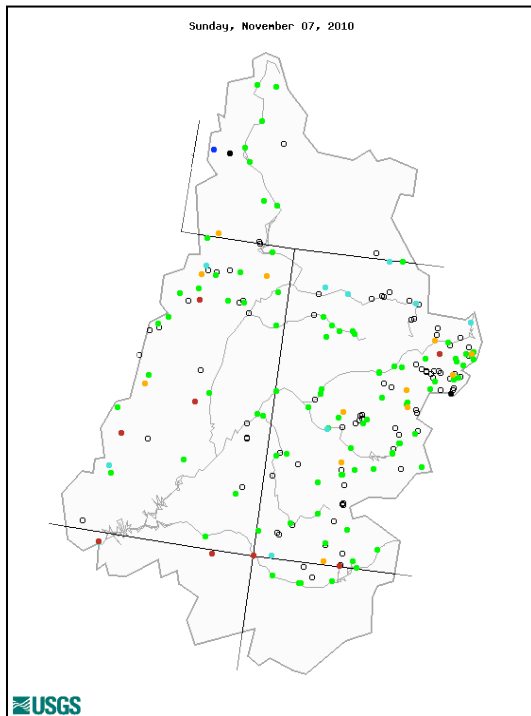
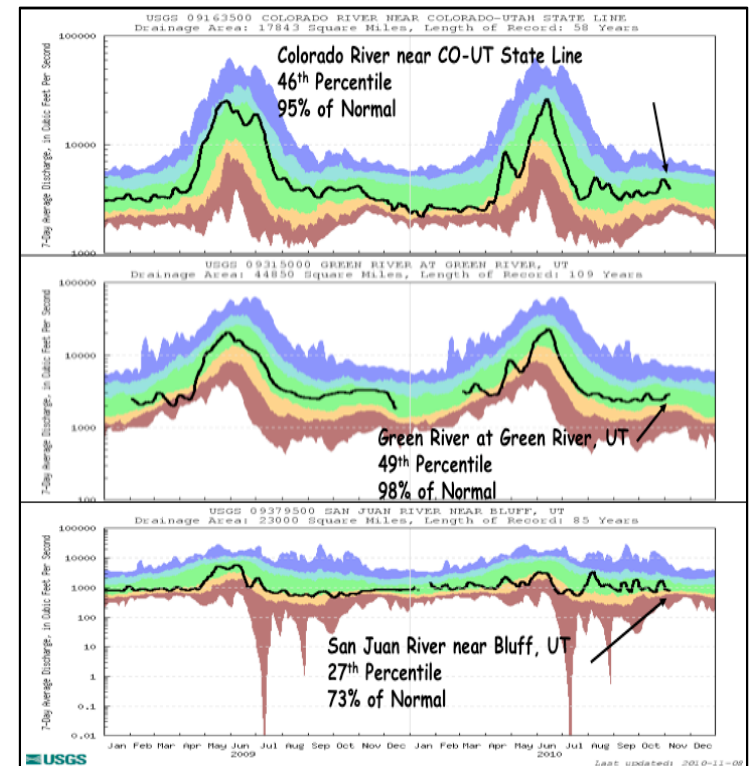


Fig. 5: USGS 7-day average streamflow compared to historical streamflow for November 7<sup>th</sup> in the UCRB.

Fig. 6: USGS 7-day average discharge over time at the CO-UT state line (top), Green River, UT (middle) and Bluff, UT (bottom).



## Water Supply and Demand

For the month of October, temperatures were above average for the UCRB and surrounding areas, and this is a pattern that has continued for the first week of November. Temperature departures ranged from 3°F above normal to as high as 10°F above normal throughout much of Wyoming. VIC soil moisture continues to show very dry soils on the eastern plains of Colorado and Wyoming with near normal conditions throughout most of the UCRB (Fig. 7).

Very little changes were seen in reservoir levels at Lakes Dillon and Granby, and at Green Mountain over the last week (all near the Colorado headwaters region). Green Mountain and Lake Dillon are still currently below average for this time of year, and Lake Granby (which has seen slight increases in levels over the past two weeks) is above average and in good condition. Navajo Lake in the San Juan basin and Flaming Gorge in the Upper Green basin both experienced small drops in levels but are still above average. Lake Powell, which had seen only minor drops for the month of October, saw a drop of over 70,000 acre feet in the past week. Releases were projected to increase for the month of November. Lake Powell is currently at 79% of average and 63% of capacity.

## Precipitation Forecast

A switch to an unsettled pattern can be expected over the UCRB for the next week. Quantitative precipitation fields (QPF) out one to two days show accumulations of more than half an inch for the northern and central mountains of Colorado. Though the mountains are favored, this system should also bring moisture east of the divide and into the particularly dry regions of eastern Colorado and Wyoming. Lesser amounts are expected in Utah and western Wyoming, though scattered precipitation is still expected. Things will quiet down for the weekend, though precipitation could return to the area early next week.

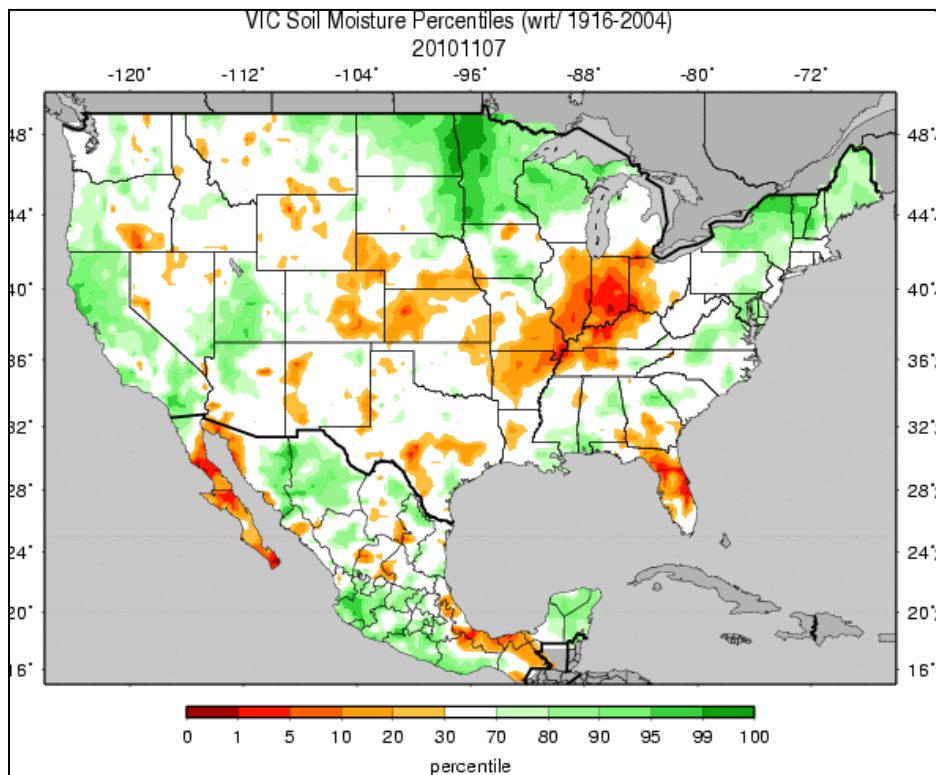


Fig. 7: VIC soil moisture percentiles as of November 7<sup>th</sup>.

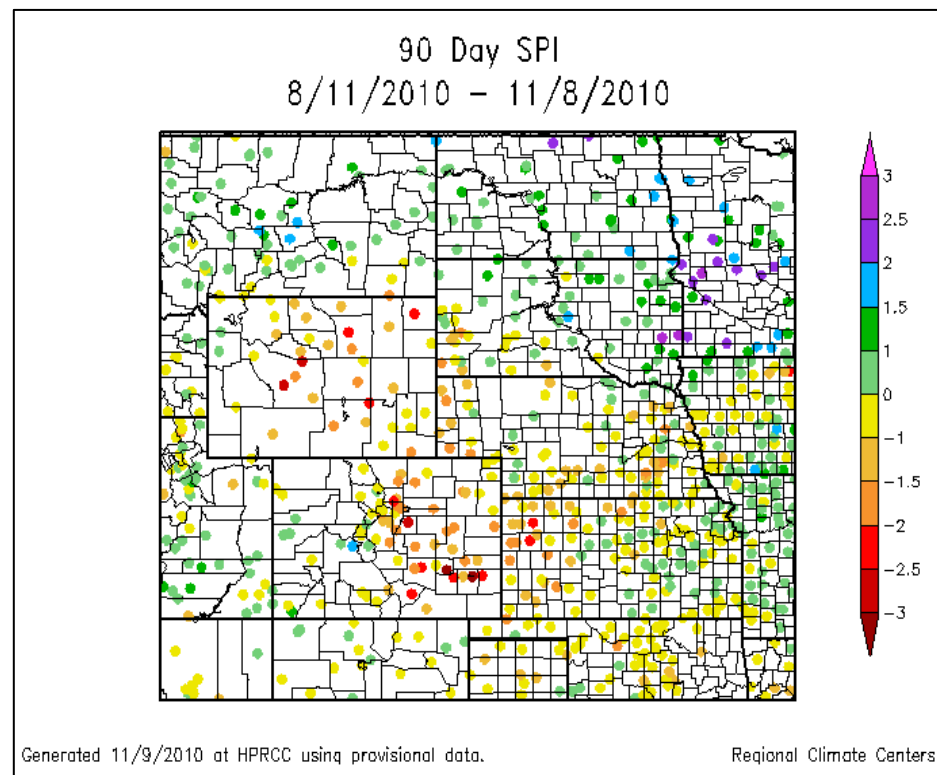


Fig. 8: 90 day standardized precipitation index.

# Drought and Water Discussion

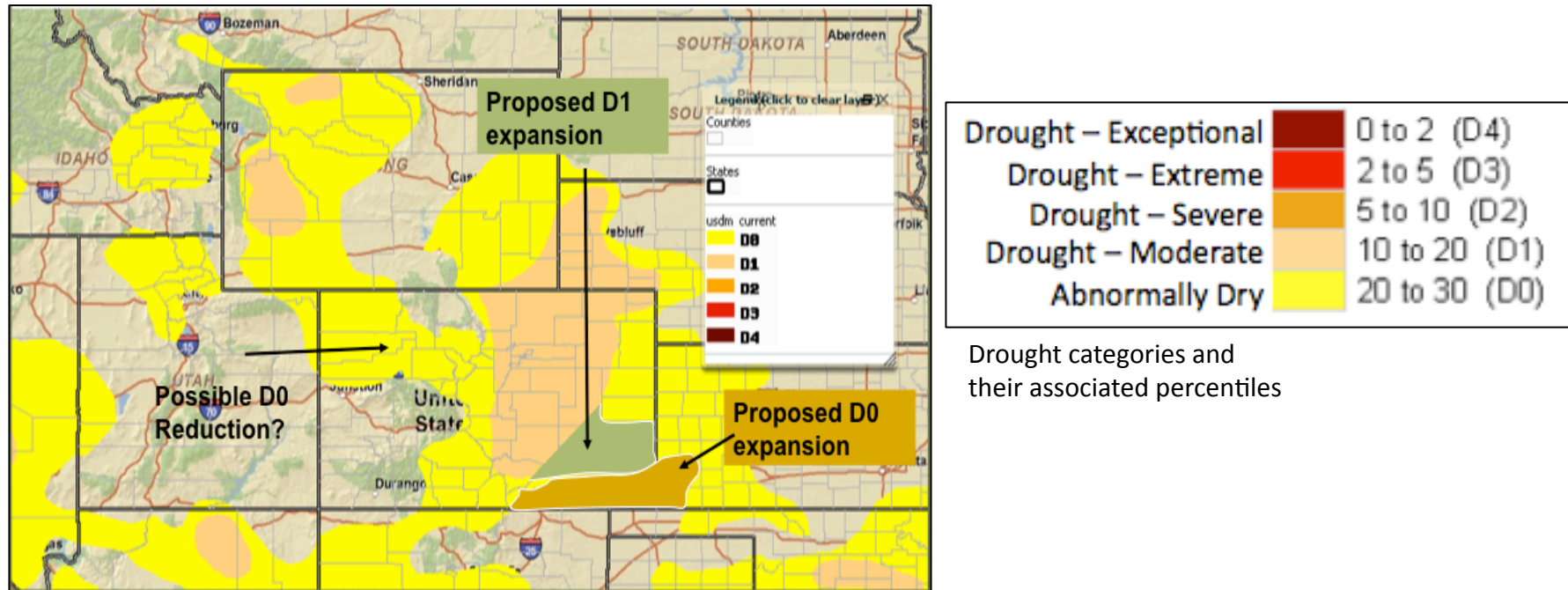


Fig. 9: November 2<sup>nd</sup> release of U.S. Drought Monitor for the UCRB

Due to the poor 90-day standardized precipitation index (SPI) values for southeastern Colorado (Fig. 8), the current U.S. Drought Monitor (USDM) author suggested an expansion of D0 and D1 from the current USDM map (Fig. 9). These expansions were agreed upon by those in attendance for the NIDIS Upper Colorado River Basin webinar/conference call on Tuesday morning.

A possible reduction in D0 throughout the Yampa-White basin was also suggested (Fig. 9), due to good streamflows, decent soil moisture depiction, and only slightly negative SPIs. However, since no precipitation occurred in the region in the past week, any changes will be delayed. It was also suggested that D1 be expanded into the Rio Grande basin, but it was agreed upon that this area would stay status quo for this week and would be revisited next week.